This session examines the estimation and implementation of highway and transit assignment processed. For highway assignment, topics include: Equilibrium assignment definition, volume/delay functions, and multi-class assignment. For transit assignment, topics include transit path building and associated settings, multi-path transit assignment. We introduce the concepts of individual simulation of auto and transit trips.

Questions and Answers during Session 7

Q: Are people using stochastic equilibrium assignment?
A: Yes, stochastic equilibrium is being used but mostly for the advanced modeling paradigms such as activity models. For the more traditional models, this method has not been that prevalent.

Q: For convergence, discuss the pros and cons of using gap vs. relative gap, as well as closure criteria values (0.0001, etc...).
A: This is a great question. While it is common to use both gap and relative gap measures, we believe it might be better to look at both the measures. The relative gap tends to be useful when volumes are low. Therefore, a convergence of 1% may be acceptable. For large volumes (>10,000), a 1% error may be too large. In such cases, we use both the relative gaps as well as the absolute gaps to determine when the procedure should terminate. We will address this question during the verbal Q&A portion.

Q: Does this method ("all or nothing") assume that all trips are based on shortest path?
A: You are right. All-or-nothing does depend on shortest paths. A point to note here is that "shortest" can be defined in many ways. You could simply use travel times to determine the "shortest" path. But it may be better to use "composite impedance" measures, such as, weighted averages of times, costs etc. to define shortest paths.

Q: It sounds like a stochastic model will work best?
A: Yes, but we need to tradeoff accuracy /theoretical correctness with time and cost of doing such an analysis. It is ultimately a judgment call on the modeler's part.

Q: Could you explain little bit more about 'weights'? Thanks.
A: The weights are simply a way of assigning importance to each iteration during your assignment process. This is exactly what Tom was referring to in the Homework discussion. Basically, in an equilibrium assignment, you do a series of all-or-nothing assignments. Then for each iteration, you assign an importance weight, which is itself derived from some other algorithms, and then compute your volumes as weighted averages of the individual iteration volumes.

Q: Are there any rules of thumb BPR equations (a and b values) for typical freeways, major/minor arterials and collectors?
A: You might want to check NCHRP 365 (1998) Table 48, Page 95

Q: Discuss the merits of using shadow pricing to reflect capacity on park and ride lots, and when is it warranted to do so
A: We will discuss this towards the end.

Q: Thanks. Am I correct in understanding that the weight factor for each iteration is related to number of iterations to run?

A: Well, in a way yes, because, the sum of weights should sum to 1. Some software packages let you assign pre-determined weights to each iteration. Most software packages, associate weights by themselves. The derivation of these weights itself is quite involved, when done using the theoretical methods.